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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/845,809	04/30/2001	George Barbastathis	MIT8462	3209

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EXAMINER
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HANNETT, JAMES M

ART UNIT	PAPER NUMBER
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2622

DATE MAILED: 05/30/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/845,809

Applicant(s)

BARBASTATHIS ET AL.

Examiner

James M. Hannett

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 17 March 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16 and 17 is/are allowed.
- 6) ☒ Claim(s) 1-15 and 18-20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 January 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

### ***Response to Arguments***

Applicant's arguments filed 3/17/2006 have been fully considered but they are not persuasive.

The applicant argues that the system of Bacs, Jr. et al. does not disclose a system that includes a spatial light modulator for selectively modulating the input image such that at least one portion of the input image may be blurred as it passes through the spatial light modulator.

The examiner disagrees with the applicant. Bacs, Jr. et al teaches on Column 10, Lines 14-49 and in the abstract that by selectively switching the liquid crystal shutters on and off the size of the lens aperture and the parallax scanning pattern are adjusted. Bacs, Jr. et al teaches that by turning the liquid crystal shutters on and off, the aperture can be moved through a plurality of positions. Bacs, Jr. et al further goes on to teach that as a result of moving the aperture in this fashion, blurring of the image can be enhanced. Therefore, Bacs, Jr. et al teaches that portions of the captured image is blurred and the blurring is controlled (enhanced by turning the liquid crystal elements on and off). Therefore, the examiner views the independently addressable matrix array of liquid crystal shutters as a means for selectively blurring (enhancing blur) a portion of an input image.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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1: Claims 1-7, 10, 12, 14 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by USPN 5,991,551 Bacs, Jr. et al.

2: As for Claim 1, Bacs, Jr. et al teaches on Column 10, Lines 33-67 and Column 11, Lines 1-4 and depicts in Figures (1 and 8) an imaging system for receiving images, the system comprising: an image receiving unit (22) for receiving an input image; and a spatial light modulator (90) interposed between the image receiving unit (22) and an input image (26), the spatial light modulator (90) for selectively modulating the input image such that at least one portion of the input image may be blurred as it passes through the spatial light modulator (90) to the image receiving unit (22).

3: In regards to Claim 2, Bacs, Jr. et al teaches on Column 5, Lines 41-44 the image receiving unit (22) comprises an array of photodetector cells (CCD array).

4: As for Claim 3, Bacs, Jr. et al teaches on Column 10, Lines 49-54 and depicts in Figure 8 the spatial light modulator (90) comprises an array of liquid crystal opto-electric elements (92).

5: In regards to Claim 4, Bacs, Jr. et al teaches on Column 10, Lines 49-54 and depicts in Figure 8 the spatial light modulator (90) comprises an array of liquid crystal opto-electric elements (92). These elements are viewed by the examiner to be birefringent elements for selectively effecting a blurring of the input image.

6: As for Claim 5, Bacs, Jr. et al teaches on Column 10, Lines 49-54 that the birefringent characteristics of each birefringent element are selectively controlled independent of other birefringent elements.

7: In regards to Claim 6, Bacs, Jr. et al teaches on Column 10, Lines 49-54 and depicts in Figure 8 the spatial light modulator (90) includes a liquid crystal cell (92).

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8: As for Claim 7, Bacs, Jr. et al does not specifically state or depict that the liquid crystal cell (92) is surrounded along its periphery by a plurality of electrodes. However, it is inherent that the spatial light modulator as depicted in Figure 8 contain a plurality of electrodes in order to individually address each of the liquid crystal cells.

9: In regards to Claim 10, Bacs, Jr. et al teaches on Column 12, Lines 38-40 and depicts in Figure 11 the image receiving unit includes a robotic vision system.

10: In regards to Claim 12, Bacs, Jr. et al teaches on Column 10, Lines 33-67 and Column 11, Lines 1-4 and depicts in Figures (1 and 8) an imaging system for selectively blurring portions of an image field, the system comprising: an array of birefringent elements (liquid crystal spatial light modulators (92)) through which the image field may pass, the birefringent elements (92) being individually selectable to permit selective birefringence of the input image. Bacs, Jr. et al teaches on Column 10, Lines 14-49 and in the abstract that by selectively switching the liquid crystal shutters on and off the size of the lens aperture and the parallax scanning pattern are adjusted. Bacs, Jr. et al teaches that as a result of moving the aperture in this fashion, blurring of the image can be enhanced. Therefore, a portion of the image is blurred.

11: In regards to Claim 14, Bacs, Jr. et al teaches on Column 10, Lines 33-67 and Column 11, Lines 1-4 and depicts in Figures (1 and 8) an imaging system for selectively blurring portions of an image field, the system comprising: a liquid crystal cell (90) through which the image field may pass; and a plurality of electrodes positioned adjacent the liquid crystal cell such that portions of the liquid crystal cell may be selected to provide birefringence of the image field as the image field is refracted through the liquid crystal cell. Bacs, Jr. et al does not specifically state or depict that the liquid crystal cell (92) is surrounded along its periphery by a plurality of

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electrodes. However, it is inherent that the spatial light modulator as depicted in Figure 8 contain a plurality of electrodes in order to individually address each of the liquid crystal cells. Bacs, Jr. et al teaches on Column 10, Lines 49-54 and depicts in Figure 8 the spatial light modulator (90) comprises an array of liquid crystal Opto-electric elements (92). These elements are viewed by the examiner to be birefringent elements for selectively effecting a blurring of the input image. Bacs, Jr. et al teaches on Column 10, Lines 14-49 and in the abstract that by selectively switching the liquid crystal shutters on and off the size of the lens aperture and the parallax scanning pattern are adjusted. Bacs, Jr. et al teaches that as a result of moving the aperture in this fashion, blurring of the image can be enhanced. Therefore, a portion of the image is blurred. Furthermore, this blurring occurs when the aperture position is shifted. Therefore, the blurring occurs prior to reaching an image receiving unit.

12: As for Claim 15, Bacs, Jr. et al teaches on Column 10, Lines 66-67 and Column 11, Lines 1-4 the portions of the liquid crystal cell may be selected to provide a desired amount of birefringence of the image field as the image field is refracted through the liquid crystal cell.

**13:** Claim 9 is rejected under 35 U.S.C. 102(b) as being anticipated by USPN 6,021,005 Cathey, Jr. et al.

14: As for Claim 9, Cathey, Jr. et al teaches on Column 3, lines 36-55, Column 5, Lines 6-15 and Column 6, Lines 46-53 and depicts in Figure 11 an imaging system for receiving images, the system comprising: an image receiving unit (110) for receiving an input image; and a spatial light modulator (106) interposed between the image receiving unit and an input image, the spatial light modulator for selectively modulating the input image such that at least one portion of the input image may be blurred as it passes through the spatial light modulator toward the

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image receiving unit. Cathey, Jr. et al teaches on Column 6, Lines 46-53 the image receiving unit includes a holographic material.

**15:** Claims 18 and 19 are rejected under 35 U.S.C. 102(b) as being anticipated by USPN 4,575,193 Greivenkamp, Jr.

16: In regards to Claim 18, Greivenkamp, Jr teaches on Column 4, Lines 6-50 on Column 11, Lines 59-68 and depicts in Figures (1 and 2) an imaging system for receiving images, the system comprising: an image receiving unit (12) for receiving an input image; and a spatial light modulator (14) interposed between the image receiving unit (12) and an input image, the spatial light modulator (14) including a first area (16) for selectively refracting the input image along a first axis of refraction toward the image receiving unit (12), and along a second axis of refraction, the second axis of refraction being angularly disposed to the first axis of refraction, and a second area (20) for selectively refracting the input image along the principle axis of refraction and along a third axis of refraction, the third axis of refraction being angularly disposed to the first axis of refraction at an angle greater than the angle of the second axis of refraction. Greivenkamp, Jr depicts in Figure 2a a spatial light modulator composed of a first area (16) and a second area (20). As can be seen from Figure 2a, a light ray (w) will be split into two rays after it passes through the first portion of the spatial light modulator (16). Therefore, a first portion of the input image (light ray w) passes through the first area (16) of the spatial light modulator (16, 18 and 20) and is slightly blurred. Furthermore, the blurring occurs after the rays of light are split. Although the depiction in Figure 2a only depicts a single light ray (W), it is clear from the specification that the imaging system is used when a large number of light rays are incident onto the spatial light modulator. Therefore, another light ray other than (W) will hit the

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spatial light modular and be split at (16) and again at (20). Therefore, a second portion (light ray other than (w)) of the input image that passes through the second area (20) of the spatial light modulator is more blurred than the first portion of the input image. The light ray has been split into four rays (eo, 00, ee and oe) after (20). Therefore, it is more blurred than the light ray that passes only through (16) which was only split into two rays.

17: As for Claim 19, Greivenkamp, Jr teaches on Column 11, Lines 25-35 that more wave plates and birefringent elements can be used instead of just two. Therefore, the system can further comprise a third area (third birefringent element) for refracting the input image along the first axis of refraction and along a fourth axis of refraction, the fourth axis of refraction being angularly disposed to the first axis of refraction at an angle greater than the angle of the third axis of refraction.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

**18:** Claim 8 is rejected under 35 U.S.C. 102(e) as being anticipated by USPN 6,107,617 Love et al.

19: In regards to Claim 8, Love et al teaches on Column 4, Lines 1-15 and depicts in Figure 3 an imaging system for receiving images, the system comprising: an image receiving unit (CCD camera) for receiving an input image; and a spatial light modulator (LC SLM) interposed



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between the image receiving unit (CCD) and an input image (incoming light), the spatial light modulator (LC SLM) for selectively modulating the input image such that at least one portion of the input image may be blurred as it passes through the spatial light modulator toward the image receiving unit. Love et al teaches the system includes a plurality of spatial light modulators interposed between the input image and the image receiving unit.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**20:** Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,991,551 Bacs, Jr. et al.

**21:** As for Claim 11, Bacs, Jr. et al teaches the invention as discussed in Claim 1. However, Bacs, Jr. et al does not teach that the image receiving unit includes a visual monitoring system.

Official notice is taken that it was well known in the art at the time the invention was made to include monitors that display captured images (visual monitoring system) in video cameras in order to allow a user to view the captured images.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to include a monitor in the image receiving system of Bacs, Jr. et al in order to allow a user to view the captured images.

**22:** Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 5,991,551 Bacs, Jr. et al in view of USPN 5,453,844 George et al.

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24: As for Claim 13, Bacs, Jr. et al teaches a system that uses Liquid crystal spatial light modulators to perform selective blurring of regions of the image. However, Bacs, Jr. et al does not teach that the image blurring is specified by an image compression algorithm.

George et al teaches on Column 3, lines 20-25 that is advantageous in imaging systems to capture blurred images in accordance with a compression operation in order to maintain fidelity of the image and to require less pixels than the original image.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to blur the image of Bacs, Jr et al in accordance with the compression operation of George et al teaches in order to maintain fidelity of the image and to require less pixels than the original image.

**23:** Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over USPN 4,575,193 Greivenkamp, Jr in view of USPN 6,107,617 Love et al.

24: In regards to Claim 20, Greivenkamp, Jr teaches the claimed invention as discussed in Claim 18. However, Greivenkamp, Jr does not teach that the spatial light modulator comprises an array of birefringent elements.

Love et al teaches on Column 4, Lines 1-15 and depicts in Figure 3 an imaging system for receiving images, the system comprising: an image receiving unit (CCD camera) for receiving an input image; and a spatial light modulator (LC SLM) interposed between the image receiving unit (CCD) and an input image (incoming light), the spatial light modulator (LC SLM) for selectively modulating the input image such that at least one portion of the input image may be blurred as it passes through the spatial light modulator toward the image receiving unit.

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Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an array of Liquid crystal elements for the Spatial light modulator of Greivenkamp, Jr in order to allow the input image to be selectively blurred on a pixel by pixel basis.

*Allowable Subject Matter*

25: Claims 16 and 17 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: The prior art does not teach the system in which the spatial light modulator includes a first area for selectively refracting the input image only along a principle axis of refraction toward the image receiving unit.

*Conclusion*

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James M. Hannett whose telephone number is 571-272-7309. The examiner can normally be reached on 8:00 am to 5:00 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Ometz can be reached on 571-272-7593. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

James M. Hannett  
Examiner  
Art Unit 2612

JMH  
May 23, 2006

A handwritten signature in black ink, appearing to read 'David Ometz', with a stylized flourish extending to the right.

DAVID OMETZ  
SUPERVISORY PATENT EXAMINER